English translation of the amendments under PCT Article 34 of the PCT Application No. PCT/CH02/00650 "Implant for bone fixation" in the name of Mathys Medizinaltechnik AG

Patent claims

1. Implant (1) for the bone fixation

A) consisting of a combination of the two materials metal and plastic; and

B) at least one passage (2) running through the implant (1) with an axle (3) for receiving a bone fixation device;

characterised in that

C) the passage (2) is provided with a peripheral perimeter (4) that is made of a different material that the implant material (1) surrounding the perimeter (4); and

D) the peripheral perimeters (4) are linked form-fittingly rigidly to the plastic material (7) of the implant.

2. Implant (1) in accordance with claim 1, characterised in that the perimeter (4) is ring-shaped or sleeve-shaped.

3. Implant (1) in accordance with claim 1, characterised in that the perimeter (4) is provided with a polygonal external form.

4. Implant (1) in accordance with one of the claims 1 to 3, characterised in that it is formed as a bone plate that is provided with a bottom side (5) and an upper side (6) suitable for the bone contact, wherein the passage (2) connects the upper side (6) to the bottom side (5).

5. Implant (1) in accordance with one of the claims 1 – 4, characterised in that the perimeter (4) is made of a metal or a metal alloy and that the material surrounding the perimeter (4) is plastic.

6. Implant (1) in accordance with one of the claims 1 – 4, characterised in that the perimeter (4) is made of a plastic and that the material surrounding the perimeter (4) is a metal or a metal alloy.

7. Implant (1) in accordance with one of the claims 1 – 6, characterised in that the plastic is chosen from the Polyaryletherketone (PAEK) family.

8. Implant (1) in accordance with one of the claims 1 – 6, characterised in that PEEK is used as plastic.

9. Implant (1) in accordance with one of the claims 1 – 8, characterised in that the plastic is reinforced, preferably with carbon fibres or PEEK fibres.

10. Implant (1) in accordance with one of the claims 1 – 9, characterised in that the metal titanium is a titanium alloy or implant steel.

11. Implant (1) in accordance with one of the claims 1 – 10, characterised in that the elements of the implant that are made of plastic are covered with a coating of titanium or a Hydroxylapatite layer.

12. Implant (1) in accordance with one of the claims 1 – 11, characterised in that the perimeter (4) is provided with a sleeve-shaped extension (8) as target aid for a bone fixation device.

13. Implant (1) in accordance with claim 12, characterised in that the extension (8) is formed on the perimeter (4) and both are made of plastic.

14. Implant (1) in accordance with one of the claims 1 – 12, characterised in that the perimeter (4) is made of a metal or a metal alloy and is set lowered in the plastic surrounding the perimeter (4), vis-à-vis the upper side (6).

15. Implant (1) in accordance with one of the claims 1 – 12, characterised in that the perimeter (4) is made of a metal or a metal alloy and set raised in the plastic surrounding the perimeter (4), vis-à-vis the upper side (6).

16. Implant (1) in accordance with one of the claims 1 – 15, characterised in that the level containing or laid on the perimeter (4) has an angle in the range 0.1° to 20.0° to the plate level.

17. Implant (1) in accordance with one of the claims 1 – 15, characterised in that it is provided with at least two passages (2) running through the implant (1) with an axle (3) for receiving a bone fixation device.

18. Implant (1) in accordance with one of the claims 1 – 17, characterised in that at least two of the passages (2) running through the implant (1) are provided with a peripheral perimeter (4) that is made of a different material than the material of the implant (1) surrounding the perimeter (4).

19. Implant in accordance with one of the claims 1 – 18, characterised in that the peripheral perimeters (4) are joined to each other in one piece by several passages (2) running through the implant (1).

20. Implant in accordance with one of the claims 1 – 19, characterised in that several peripheral perimeters (4) are joined to each other in the form of a grid.

21. Implant in accordance with one of the claims 1 – 20, characterised in that it comprises at least one bone fixation device that can be inserted into the passages (2), preferably a bone screw, which is positioned in poly-axial direction in relation to the implant.

22. Implant in accordance with one of the claims 1 – 21, characterised in that it comprises at least one bone fixation device that can be inserted into the passages (2), preferably a bone screw, which can be connected with the implant with stable angle.